

MOTIVATIONAL FACTORS INFLUENCING THE CHOICE OF MEDICAL STUDIES AND FUTURE CAREER PLANS AMONG MONTENEGRIN STUDENTS

MOTIVACIJSKI DEJAVNIKI, KI VPLIVAJO NA IZBIRO ŠTUDIJA MEDICINE IN POKLICNE NAČRTE ZA PRIHODNOST MED ČRNOGORSKIMI ŠTUDENTI

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ABSTRACT

Keywords:

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Introduction: There is a concerning trend of emigration among highly educated individuals in Montenegro. This includes medical professionals who seek better job opportunities abroad. The aim of the present study was to identify the primary motivational factors driving Montenegrin medical students to pursue a career in medicine, and whether these factors undergo changes over the course of their studies.

Methods: A cross-sectional study included 210 medical students in Montenegro, 27.62% were males, and 72.38% were females. The mean age of the students was 21.90 years (SD=3.05) (range 19-39). Their academic motivation was analysed using the Academic Motivation Scale, previously validated in various cultural contexts.

Results: The results showed that autonomous motivation levels were higher than controlled motivation levels ($p < 0.001$) among students in Montenegro, which has been previously associated with better learning outcomes. Students with medical doctors among their family members had higher extrinsic motivation related to rewards and punishments (extrinsic motivation with external regulation $p = 0.018$). Amotivation showed a trend of increasing as the students got closer to graduation ($p = 0.057$). Only 8.1% of students planned a career in primary healthcare, and 1% wished to specialize in family medicine.

Conclusions: This study's findings, which indicate high levels of autonomous motivation among medical students, are of significant importance. They contribute to a comprehensive understanding of the motivation factors among medical students and young healthcare professionals in Montenegro. Moreover, they provide a basis for the implementation of strategic interventions to retain highly skilled medical professionals within the country's workforce, thereby addressing the concerning trend of emigration among this group.

IZVLEČEK

Ključne besede:

študenti medicine
medicinsko
izobraževanje
akademska motivacija
poklicni načrti

Uvod: Med visokošolsko izobraženimi posamezniki v Črni gori obstaja skrb vzbujajoč trend izseljevanja, kar vključuje zdravstvene delavce, ki iščejo boljše zaposlitvene možnosti v tujini. Cilj te študije je bil opredeliti primarne motivacijske dejavnike, zaradi katerih črnogorski študenti medicine izberejo poklicno pot v medicini, in ugotoviti, ali se ti dejavniki med njihovim študijem spremenijo.

Metode: V presečno študijo smo vključili 210 študentov medicine v Črni gori, med katerimi je bilo 27,62 % moških in 72,38 % žensk. Povprečna starost študentov je bila 21,90 leta (SD = 3,05) (razpon 19-39). Njihovo akademsko motivacijo smo analizirali z lestvico akademske motivacije, ki je bila predhodno validirana v različnih kulturnih okoljih.

Rezultati: Rezultati so pokazali, da so ravni avtonomne motivacije večje od kontrolirane ($p < 0,001$), kar je bilo prej povezano z boljšimi učnimi rezultati. Študenti, ki imajo zdravnike med družinskimi člani, so imeli višjo zunanjo motivacijo, povezano z nagrajevanjem in kaznovanjem (zunanja motivacija z zunanjo regulacijo $p = 0,018$). Trend pomanjkanja motivacije se povečuje, ko se študenti približujejo zaključku študija ($p = 0,057$). Samo 8,1 % študentov je načrtovalo poklicno pot v primarnem zdravstvenem varstvu, 1 % pa jih je želelo opravljati specializacijo družinske medicine.

Zaključki: Ugotovitve študije, ki kažejo visoke ravni avtonomne motivacije med študenti medicine, so zelo pomembne, saj prispevajo k celovitemu razumevanju motivacijskih dejavnikov med študenti medicine in mladimi zdravstvenimi delavci. Poleg tega zagotavljajo podlago za izvedbo strateških ukrepov, s katerimi bi zadržali visoko usposobljene zdravstvene delavce na delovnih mestih v državi in tako obvladali skrb vzbujajoč trend izseljevanja v tej skupini.

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1 INTRODUCTION

Medical practice requires dedication, knowledge, strenuous work, good interpersonal skills, empathy, and professional and ethical behaviour toward patients. Because of the high demands associated with the medical profession, medical students should possess and maintain a high level of motivation throughout their education. Motivation can be defined as a process that initiates, guides, and stimulates individuals to act in a certain fashion to achieve a specific goal. Of the several theories that explain motivation, a widely used approach in medicine is the self-determination theory proposed by Deci and Ryan (1, 2). According to this theory there are two main types of motivation - intrinsic and extrinsic (3). Intrinsic motivation (IM) leads people to perform activities simply for the internal emotions associated with the action (pleasure, enjoyment, curiosity) (3, 4). IM can be further classified into three subscales (4, 5). IM to know refers to the pleasure related to learning or exploring something new. IM to accomplish things refers to the feeling of satisfaction associated with trying to achieve or create something. IM to experience stimulation refers to the feeling of stimulating sensations during the activity. On the other hand, extrinsic motivation (EM) makes people act to attain some specific result. There are three subscales of EM (4-6). Identified EM occurs when an individual identifies that a certain behaviour is ranked highly in their personal system of values (e.g., studying medicine to reach a personal goal). Introjected EM occurs when social expectations influence behaviour. External regulation occurs when the reason for doing something is connected with rewards or punishments (4-6). IM and identified EM are considered "autonomous motivation", while introjected EM and external regulation are considered "controlled motivation" (4). The self-determination theory also includes amotivation, which is the absence of any motivation (3, 4).

In Montenegro there is a concerning trend of emigration among highly educated individuals, including medical professionals, who seek better job opportunities abroad. This "brain drain" not only diminishes the quality of healthcare domestically, but also represents significant economic loss for society (7). Higher education in Montenegro is currently subsidized by the government, which makes higher education at public universities tuition-free. As such, the departure of young medical professionals from the country is not just a healthcare challenge, but also an economic setback. The Faculty of Medicine at the University of Montenegro was founded in 1997, which makes it one of the youngest public medical programmes in the region. The significance of these unique features of medical education in Montenegro becomes clear in the light of the findings of a systematic review by Goel et al. (8), which showed that the motivational factors

among medical students are significantly influenced by the level of socioeconomic development of the country they are studying in. In most high-income countries, scientific interests, such as a passion for medical subjects, primarily drive students towards pursuing medicine. Conversely, in low-income countries, financial security, parental aspirations, and societal expectations are among the primary motivators (8).

The aim of the present study is to identify the primary motivational factors driving Montenegrin medical students to pursue careers in medicine, and whether these factors undergo changes over the course of their studies. By comprehensively understanding students' motivations, educators and policymakers can implement strategic interventions to retain highly skilled medical professionals within the country's workforce. To the best of our knowledge, no similar studies have been conducted in Montenegro.

2 MATERIALS AND METHODS

This was a questionnaire-based cross-sectional study.

2.1 Ethics

The study was approved by the Ethics Committee of the Medical Faculty at the University of Montenegro (Approval number: 769/2, Date: June 1, 2023.) and conducted according to the ethical principles of the Declaration of Helsinki for research with human beings.

The participants were informed about the study and assured about their confidentiality and data security. The students were given instructions for completing the questionnaire, along with assurances that they were free to refuse to participate or to withdraw consent for participation at any point, and that their answers would not affect their grades. The questionnaires were anonymous and self-administered, and informed consent confirmed the voluntary participation of each participant at the beginning of the survey. A check box was provided on the answer sheet of the survey to indicate non-consent.

2.2 Study setting

This study was carried out at the Faculty of Medicine of the University of Montenegro in Podgorica, which is the only medical faculty in the country. The medicine study programme follows a six-year undergraduate curriculum. In the academic year of 2022/2023, this study programme enrolled a total of 386 students, which included all students from year 1 to year 6.

2.3 Study participants

All the students enrolled in the medicine study programme were invited to participate in the study. The consent information and a link to the questionnaire were distributed to the students via email or Viber. The study was conducted in June and July of 2023 using an online survey management tool, <https://app.freeonlinesurveys.com/>.

Valid responses were defined as those that had no missing data. The students who did not consent to participation, and those whose responses had missing data, were thus not included in the study.

2.4 Instruments

We used the Academic Motivation Scale (AMS) developed by Vallerand et al. (9). This is a validated instrument designed to measure motivation in an academic setting, with satisfactory levels of internal and external consistency demonstrated across various cultural contexts and countries.

The AMS questions were translated by the forward- and back-translation procedure from English to Montenegrin for this study. The AMS contains 28 items rated on a Likert-type scale ranging from 1 (no agreement) to 7 (total agreement), with a mean of 4 (moderate correspondence). The students were asked to indicate their agreement with a statement, allowing the calculation of each type of motivation. The AMS is divided into seven subscales assessing three types of IM: 1) IM to know, 2) to accomplish things, and 3) to experience stimulation; three types of EM: 1) identified EM, 2) introjected EM, and 3) external regulation; and one type of amotivation. Four questions are assigned to each subscale in a random order.

The questionnaire used in the present study included three additional sections: participants' informed consent, background information (including gender, age, years studying, family members who are physicians, influences of individuals), and expectations about future careers (two questions).

2.5 Statistical analysis

The sample size was calculated by the following formula: $n = z^2 * p(1-p) / e^2$. At a prevalence rate of 0.50, an error rate of 0.05, and a z-value of 1.96, the required sample size was 193.

Descriptive statistics were used to analyse demographic data. The frequencies and percentages of the qualitative variables were obtained, as well as the means and medians of the quantitative variables. Chi-square and Fisher's exact tests were used to compare the nominal variables. For differences in academic motivation, we used the independent samples t-test and one-way analysis

of variance (ANOVA). A test for normality was performed using the Kolmogorov-Smirnov and Shapiro-Wilk tests. The Cronbach's alpha was calculated to assess the internal consistency of the study questionnaire, and the result of 0.88 indicated the high reliability of the AMS. A p-value of less than 0.05 was considered statistically significant. The statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS), version 26.0 (IBM, New York, USA).

3 RESULTS

Out of 386 students, 239 filled out the questionnaire, achieving a response rate of 61.92%. However, 21 responses were invalid and excluded according to the exclusion criteria, and eight participants indicated their non-consent. A total of 210 responses were thus used for data analysis, representing 54.40% of all students enrolled in the medicine study programme at the University of Montenegro.

The sociodemographic characteristics of the student population and their professional plans are shown in Table 1. Of the respondents, 27.62% were males and 72.38% were females. The mean age of the students was 21.90 years (SD=3.05) (range 19-39).

A total of 85.71% of the students said they made their own decision with regard to studying medicine, while for 9.05% their parents played the most significant role in this choice. More than 40% of the students (43.33%) had a medical doctor among their family members, but less than 15% had parents in the medical profession.

Almost two-thirds (57.14%) of the students planned to work in the public sector, while only 11.90% preferred the private sector. The share of students stating they would like to work abroad was 16.19%. Most of the respondents (48.10%) wanted to work at the Clinical Centre of Montenegro, which is a tertiary care hospital. The proportion of students who would specialize in non-surgical disciplines was the highest (29.53%), and the most popular specialties were internal medicine (13.81%), followed by surgery (10.95%), and paediatrics (8.58%). Most importantly, only a small proportion of the students planned to work in primary health care (8.10%) and specialize in family medicine (0.95%).

Table 1. Comparison of sociodemographic characteristics and professional plans by gender.

| | Male n (%) | Female n (%) | Total n (%) | *p-value |
|--|---------------|-----------------|----------------|--------------|
| Year of study | 58 (27.62) | 152 (72.38) | 210 (100.00) | 0.284 |
| 1st | 18 | 50 | 68 (32.38) | |
| 2nd | 6 | 27 | 33 (15.71) | |
| 3rd | 7 | 16 | 23 (10.95) | |
| 4th | 6 | 21 | 27 (12.86) | |
| 5th | 11 | 27 | 38 (18.10) | |
| 6th | 10 | 11 | 21 (10.00) | |
| Age (years) | | | | 0.683 |
| 19-20 | 21 | 65 | 86 (40.95) | |
| 21-23 | 23 | 53 | 76 (36.19) | |
| 24 and more | 14 | 34 | 48 (22.86) | |
| Most influential person in the choice to study medicine | | | | 0.349 |
| Self | 47 | 133 | 180 (85.71) | |
| Parent(s) | 6 | 13 | 19 (9.05) | |
| Other | 5 | 6 | 11 (5.24) | |
| Family members as medical doctors | | | | 1.000 |
| No | 33 | 86 | 119 (56.67) | |
| Yes | 25 | 66 | 91 (43.33) | |
| Father and/or mother | 12 | 17 | 29 (13.81) | |
| Grandfather and/or grandmother | 5 | 10 | 15 (7.14) | |
| Brother and/or sister | 7 | 8 | 15 (7.14) | |
| Other | 10 | 43 | 53 (25.24) | |
| Preferred sector of work | | | | 0.397 |
| Public in Montenegro | 29 | 91 | 120 (57.14) | |
| Private in Montenegro | 7 | 18 | 25 (11.90) | |
| Other country | 9 | 25 | 34 (16.19) | |
| Other plans | 2 | 2 | 4 (1.90) | |
| Do not know | 11 | 16 | 27 (12.87) | |
| Preferred setting of work | | | | 0.396 |
| Clinical Centre of Montenegro | 32 | 69 | 101 (48.10) | |
| Hospital | 4 | 16 | 20 (9.52) | |
| Outpatient clinic | 1 | 16 | 17 (8.10) | |
| Private practice | 9 | 23 | 32 (15.24) | |
| Medical faculty | 2 | 6 | 8 (3.81) | |
| Other | 5 | 14 | 19 (9.05) | |
| Do not know | 5 | 8 | 13 (6.18) | |
| Preferred professional plan | | | | 0.657 |
| Surgical specialty | 16 | 28 | 44 (20.95) | |
| Non-surgical specialty | 14 | 48 | 62 (29.53) | |
| Family medicine | 1 | 3 | 4 (1.90) | |
| Research work | 4 | 11 | 15 (7.14) | |
| Preclinical specialty | 1 | 6 | 7 (3.33) | |
| Other | 14 | 42 | 56 (26.67) | |
| Do not know | 8 | 14 | 22 (10.48) | |
| Preferred specialization | | | | 0.079 |
| Dermatovenerology | 2 | 5 | 7 (3.33) | |
| Public health | 1 | 2 | 3 (1.43) | |

| | Male n (%) | Female n (%) | Total n (%) | *p-value |
|------------------------|---------------|-----------------|----------------|----------|
| Gynaecology/Obstetrics | 2 | 10 | 12 (5.71) | |
| Surgery | 8 | 15 | 23 (10.95) | |
| Internal medicine | 10 | 19 | 29 (13.81) | |
| Neurosurgery | 3 | 3 | 6 (2.86) | |
| Neurology | 3 | 8 | 11 (5.24) | |
| Ophthalmology | 0 | 13 | 13 (6.19) | |
| Orthopaedics | 3 | 0 | 3 (1.43) | |
| Otorhinolaryngology | 2 | 2 | 4 (1.90) | |
| Paediatrics | 2 | 16 | 18 (8.58) | |
| Family medicine | 0 | 2 | 2 (0.95) | |
| Psychiatry | 2 | 2 | 4 (1.90) | |
| Radiology | 4 | 5 | 9 (4.29) | |
| Forensic medicine | 2 | 6 | 8 (3.81) | |
| Other | 14 | 44 | 58 (27.62) | |

*p-value for the chi-square test and Fisher's exact test.

Table 2 and Table 3 summarize the results of the AMS. The highest mean motivation scores were observed for item 3 (6.40 ± 1.05) and item 10 (6.15 ± 1.33). The lowest score was observed for item 19 (1.56 ± 1.29).

Table 2. The mean value, standard deviation and ranking of all 28 items of the Academic Motivation Scale.

| Scale | Statements | mean \pm SD | Ranking according to the mean value |
|--|---|-----------------|-------------------------------------|
| Intrinsic motivation to know | 2. Because I experience pleasure and satisfaction while learning new things. | 5.76 \pm 1.41 | 9 |
| | 9. For the pleasure I experience when I discover new things never seen before. | 5.84 \pm 1.42 | 7 |
| | 16. For the pleasure that I experience in broadening my knowledge about subjects which appeal to me. | 5.89 \pm 1.29 | 5 |
| | 23. Because my studies allow me to continue to learn about many things that interest me. | 5.88 \pm 1.32 | 6 |
| Intrinsic motivation towards accomplishment | 6. For the pleasure I experience while surpassing myself in my studies. | 4.90 \pm 1.79 | 18 |
| | 13. For the pleasure that I experience while I am surpassing myself in one of my personal accomplishments. | 5.55 \pm 1.61 | 10 |
| | 20. For the satisfaction I feel when I am in the process of accomplishing difficult academic activities. | 4.42 \pm 1.94 | 22 |
| | 27. Because college allows me to experience a personal satisfaction in my quest for excellence in my studies. | 5.37 \pm 1.63 | 14 |
| Intrinsic motivation to experience stimulation | 4. For the intense feelings I experience when I am communicating my own ideas to others. | 5.28 \pm 1.57 | 16 |
| | 11. For the pleasure that I experience when I read interesting authors. | 5.39 \pm 1.73 | 12 |
| | 18. For the pleasure that I experience when I feel completely absorbed by what certain authors have written. | 4.59 \pm 1.88 | 20 |
| | 25. For the "high" feeling that I experience while reading about various interesting subjects. | 5.37 \pm 1.59 | 13 |

| Scale | Statements | mean±SD | Ranking according to the mean value |
|--|--|-----------|-------------------------------------|
| Extrinsic motivation: external regulation | 1. Because with only a high-school degree I would not find a high-paying job later on. | 4.37±2.22 | 23 |
| | 8. In order to obtain a more prestigious job later on. | 5.54±1.66 | 11 |
| | 15. Because I want to have “the good life” later on. | 5.78±1.57 | 8 |
| | 22. In order to have a better salary later on. | 5.36±1.70 | 15 |
| Extrinsic motivation: introjected regulation | 7. To prove to myself that I am capable of completing my college degree. | 4.55±2.12 | 21 |
| | 14. Because of the fact that when I succeed in college, I feel important. | 4.73±1.98 | 19 |
| | 21. To show myself that I am an intelligent person. | 4.12±1.94 | 24 |
| | 28. Because I want to show myself that I can succeed in my studies. | 5.23±1.79 | 17 |
| External motivation: identified regulation | 3. Because I think that a college education will help me better prepare for the career I have chosen. | 6.40±1.05 | 1 |
| | 10. Because eventually it will enable me to enter the job market in a field that I like. | 6.15±1.33 | 2 |
| | 17. Because this will help me make a better choice regarding my career orientation. | 6.11±1.16 | 3 |
| | 24. Because I believe that a few additional years of education will improve my competence as a worker. | 6.04±1.32 | 4 |
| Amotivation | 5. Honestly, I don't know; I really feel that I am wasting my time in school. | 1.76±1.38 | 26 |
| | 12. I once had good reasons for going to college; however, now I wonder whether I should continue. | 2.49±1.95 | 25 |
| | 19. I can't see why I go to college and frankly, I couldn't care less. | 1.56±1.29 | 28 |
| | 26. I don't know; I can't understand what I am doing in school. | 1.61±1.50 | 27 |

Table 3. Difference in academic motivation scores between students by gender, and between students who have a medical doctor among their family members vs. those who do not.

| Scale | Total (n=210) mean±SD | Gender | | | Family members as medical doctors | | |
|------------------------------|--------------------------|------------------------|---------------------------|---------|-----------------------------------|-----------------------|--------------|
| | | Male (n=58) mean±SD | Female (n=152) mean±SD | p-value | Yes (n=91) mean±SD | No (n=119) mean±SD | p-value |
| Intrinsic motivation (IM) | 5.35±1.19 | 5.40±1.20 | 5.33±1.19 | 0.702 | 5.34±1.18 | 5.36±1.20 | 0.865 |
| IM to know | 5.84±1.13 | 5.86±1.06 | 5.83±1.16 | 0.786 | 5.83±1.12 | 5.85±1.15 | 0.928 |
| IM towards accomplishment | 5.06±1.40 | 5.12±1.46 | 5.03±1.39 | 0.687 | 5.04±1.31 | 5.07±1.48 | 0.906 |
| IM to experience stimulation | 5.16±1.35 | 5.21±1.34 | 5.13±1.35 | 0.714 | 5.13±1.43 | 5.18±1.29 | 0.801 |
| Extrinsic motivation (EM) | 5.37±1.06 | 5.17±1.10 | 5.44±1.04 | 0.105 | 5.54±0.91 | 5.23±1.15 | 0.031 |
| EM external regulation | 5.26±1.45 | 5.14±1.63 | 5.31±1.38 | 0.457 | 5.52±1.23 | 5.06±1.57 | 0.018 |
| EM introjected regulation | 4.66±1.61 | 4.37±1.60 | 4.77±1.60 | 0.103 | 4.85±1.45 | 4.52±1.71 | 0.134 |
| EM identified regulation | 6.18±0.94 | 6.01±0.99 | 6.24±0.91 | 0.122 | 6.25±0.79 | 6.12±1.04 | 0.295 |
| Amotivation | 1.86±1.29 | 1.89±1.44 | 1.84±1.24 | 0.825 | 1.89±1.26 | 1.83±1.32 | 0.738 |
| *Autonomous motivation | 5.56±1.04 | 5.55±1.09 | 5.56±1.02 | 0.985 | 5.56±1.00 | 5.55±1.07 | 0.935 |
| **Controlled motivation | 4.96±1.32 | 4.75±1.38 | 5.04±1.29 | 0.162 | 5.19±1.16 | 4.79±1.42 | 0.027 |

P-value for independent samples t-test. *Autonomous motivation = intrinsic motivation and extrinsic identified regulation: **Controlled motivation = extrinsic introjected regulation and external regulation. Bold text denotes values that are statistically significant.

Table 4. One way analysis of variance (ANOVA) of the academic motivation scores between students by study year and age.

| Scale | Study Year | | Age | |
|------------------------------|------------|-----------------|-------|-----------------|
| | F | Overall p-value | F | Overall p-value |
| Intrinsic motivation (IM) | 0.721 | 0.608 | 1.113 | 0.331 |
| IM to know | 0.508 | 0.770 | 0.274 | 0.761 |
| IM towards accomplishment | 1.562 | 0.172 | 2.345 | 0.098 |
| IM to experience stimulation | 0.256 | 0.936 | 1.047 | 0.353 |
| Extrinsic motivation (EM) | 1.499 | 0.192 | 0.608 | 0.545 |
| EM external regulation | 3.463 | 0.005 | 2.918 | 0.056 |
| EM introjected regulation | 1.425 | 0.217 | 0.710 | 0.493 |
| EM identified regulation | 1.459 | 0.205 | 0.246 | 0.782 |
| Amotivation | 2.298 | 0.053 | 2.947 | 0.057 |
| *Autonomous motivation | 0.760 | 0.580 | 1.010 | 0.366 |
| **Controlled motivation | 1.269 | 0.279 | 0.889 | 0.413 |

*Autonomous motivation = intrinsic motivation and extrinsic identified regulation; **Controlled motivation = extrinsic introjected regulation and external regulation. Bold text denotes values that are statistically significant.

Students showed somewhat higher levels of EM (5.37 ± 1.06) than IM (5.35 ± 1.19). More specifically, especially high scores were found for identified and external regulation (6.18 ± 0.94 , and 5.26 ± 1.45 , respectively). Among IMs, the mean score of internal motivation to know (5.84 ± 1.13) was the highest. The mean score of AM was 1.86 ± 1.29 . The IM mean score was higher among male students, while the EM mean score was higher among female students. However, there was no statistically significant difference in the seven subscales when grouped according to gender. The mean autonomous motivation (mean \pm SD= 5.56 ± 1.04) score was significantly higher than the controlled motivation (mean \pm SD= 4.96 ± 1.32) score ($p < 0.001$, data not shown in the table). Interestingly, students who had a medical doctor among their family members had significantly higher controlled motivation scores ($p = 0.027$), EM scores ($p = 0.031$), and specifically EM external regulation scores ($p = 0.018$), compared to the group of students who had no medical doctors among their family members.

Table 4 shows the results of the AMS across study years and ages. The EM external regulation value was significantly lower among 3rd year students ($p = 0.005$). The AM value was highest in the oldest group of students, with near statistical significance ($p = 0.057$).

4 DISCUSSION

This study found high levels of autonomous motivation among medical students, with the highest-rated motivational item being to gain knowledge for one's future career. The leading motivation sub-scales were "identified extrinsic motivation" and "intrinsic motivation to know". The IM score was higher among male students, while the EM score was higher among female students. Students with a medical doctor in the family had lower IM and higher amotivation compared to those who had no medical doctors among their family members.

Motivational factors influence medical students' enrolment in medical studies and affect their academic performance. These factors are influenced by other characteristics of the individual, such as socioeconomic status and cultural background (8). According to the self-determination theory, IM and EM identified motivation, which are together considered "autonomous motivation", are desirable for studying medicine since they have been associated with better student performance, improved study strategies, and more efficient learning (10, 11). The autonomous factors were also the primary factors that motivated the Montenegrin students to study medicine. A study conducted in Lebanon of 206 students also showed a higher level of autonomous rather than controlled motivation (12). Our results suggest that "identified EM" and "IM to know" were the leading motivation sub-scales for students to undertake medical study. The highest-rated motivational items were to gain knowledge for one's future career in the medical field. Our findings agree with the results of studies performed in Singapore (13) and in Pakistan (14). Diwan et al. found that the

motivations for entering medical education in India included personal ambition, altruistic reasons, parental desire, the opportunity for a respected profession, and financial incentives (15). Kavousipour et al. conducted a study in Iran and also identified parental wishes, the ability to learn, get a good job in the future, and higher social and professional status as primary motivation factors in this context (16). Another study in Latin America found that significant motivations in choosing to study medicine included: social/altruist, economic/prestige, and academic performance motivation (17). Polish medical students reported that the main reasons for choosing medicine were altruistic and scientific motives (18). Similarly, social/altruist motivation was the primary factor in selecting medical careers among students in Hungary and Ireland, followed by EM: obtaining a degree, getting good job, and accessing career opportunities (19, 20).

In the last decade women have started to represent the majority of those who receive advanced academic degrees in Montenegro, including medical degrees (21). As such it is not surprising that the majority of surveyed students were female (72.38%), similar to in studies from Croatia (22), Serbia (23), and Lebanon (24). Several studies have also shown that females are more intrinsically motivated than males (24). However, the difference in motivational factors between genders was not statistically significant in our study, similarly to in Sarkis et al. (12).

Students' motivation tends to change during their medical education. We found the highest score for autonomous motivation was for students in the first year, with the lowest score for the sixth-year students. The second- and fifth-year students had the highest scores for controlled motivation. A higher AM score was found in the final-year students. Our findings are supported by studies conducted in Brazil (25) and Lebanon (12), which showed a higher level of autonomous motivation in the initial semesters of medical school, and higher levels of amotivation in the final semesters.

Finally, significantly higher controlled, EM and external regulation scores were found in students with a medical doctor among their family members, which indicates that they are motivated by rewards and constraints. These results suggest that the most prevalent academic motivations for a career in this group of students were getting better career opportunities, outcomes, and salaries. Moreover, students whose family members were medical professionals had lower IM and higher AM compared to those who did not have a medical doctor in the family. These observations align with observations from a study conducted in Japan (26). Parental higher education and having medical doctors in the family were also motivators for choosing medical studies in Poland (18) and Brazil (27).

Most Montenegrin medical students wish to be employed in the public sector, while 16.2% would like to work abroad. Internal medicine and surgery were the most popular specialties among our students, while only a small proportion of planned to specialize in family medicine and practice medicine in a primary healthcare setting. These findings are comparable to the preferred career plans of students in Serbia (23). In contrast, family medicine was one of the preferred choices among German medical students (28). Our findings highlight that additional efforts from educational institutions, healthcare organizations and policymakers are urgently needed in order to make a career in family medicine more desirable, as a more efficient healthcare system would put more emphasis on primary healthcare.

The strengths of the present study are the use of the cross-culturally validated AMS. This allows comparison of the results presented here with others from the future, or to the results of studies conducted in other countries that used the same questionnaire. More importantly for the contribution of this research is the fact that there has been no similar study examining the academic motivational factors of medical students in Montenegro. The main limitation of the present study is the relatively low number of participants, although it did include more than 50% of all the medical students in the country. Another limitation could be a recall bias, since some students might over- or underestimate their answers to specific questions.

5 CONCLUSION

The findings of the present study provide important insights that can enable educators, policymakers, future employers and healthcare institutions to better understand the motivations and perceptions of medical students. This is the first step that will enable them to make meaningful changes in education, designing the curriculum and educational activities that will enhance and maintain autonomous motivation, and improve study outcomes. Teaching methods can improve or weaken medical students' motivation levels. The curriculum must be regularly assessed and evaluated to identify areas for improvement and ensure it meets the desired outcomes. It should be more clinical competency-based and focused on practical education that reinforces the application of the students' knowledge. Amidst the current challenges in policymaking and the organization of work within healthcare institutions, it is imperative to enhance the quality of healthcare and retain our highly skilled young medical professionals. Given the prevailing lack of interest in family medicine, we propose the provision of early and meaningful clinical experience in family medicine settings for medical students. This initiative is a crucial step towards fostering interest and understanding of the

specialty, and addressing the pressing need for more family medicine practitioners in our healthcare system.

CONFLICTS OF INTEREST

The authors declare that no conflicts of interest exist.

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ETHICAL APPROVAL

The study was approved by the Ethics Committee of the Faculty of Medicine at the University of Montenegro (Approval number: 769/2, Date: 1st of June 2023), and conducted according to the ethical principles of the Declaration of Helsinki.

AVAILABILITY OF DATA AND MATERIALS

All data and materials used in this study are available upon reasonable request.

LLM STATEMENT

During the preparation of this work the authors used ChatGPT 3.5 in order to improve the readability and language of the manuscript. After using this tool, the authors reviewed and edited the content as needed and took full responsibility for the content of the publication.

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The authors declare that this manuscript has not been published in or submitted to any reprint repository or elsewhere.

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